of August, and then late in September we got back once more to the old position of the Hindenburg Line. When we got as far as that inquiries were set on foot to ascertain whether our troops were overtired, now that they had fought continuously for six weeks, but all the information pointed to the fact they were still full of go and keen to attack, so Sir Douglas Haig decided to press home the advance and to attack at all points.

The consequence was that on September 27th, 28th, and 29th our great assault took place on the Hindenburg Line, and in the north the Belgians joined in with the Second Army. On September 27th and 28th the Second, Third, and First Armies attacked, and finally, on the 29th, the Fourth Army. The result was a universal advance, heavy losses, but a complete destruction of the German morale, for now that they were driven back from what they had believed to be an impregnable position the fighting spirit was knocked out of them, although the First, Third, and Fourth Armies had some strenuous opposition in very difficult country early in October.

I need hardly remind you that these advances of ours always meant a constant moving and re-pitching of our casualty clearing stations, which had now to leave their huts, and some of their equipment behind them, and do their work in tents. But before each fresh advance there was generally a little breathing time, and, as everything was planned and thought out beforehand by the various Directors of Medical Services and their consulting surgeons, the casualty clearing stations were generally all well placed and well equipped before the fighting of the next stage began. What we did need very badly was more transport, and there can be no doubt that if front line surgery is to be maintained as it should be in an advance then the casualty clearing stations of the future must have far more transport allotted to them than they have had hitherto. We had great difficulties for want of it. During the earlier part of our advance the stress of the work fell successively on the Fourth, Third, and First Armies, and then on the Second Army. The Fifth Army had not been in the line since the great German attack, and was only just being reinstated when our own attack opened on August 8th. It came into action in September.

As far as the surgery was concerned, there was increasing difficulty in supplying sufficient staffs as more and more of the whole army became engaged, but almost everywhere the high standard which had been reached was maintained in spite of the difficulties.

A greater trouble was that the casualty clearing stations had often to send some patients to the base before operation or else to evacuate others sooner than was surgically advisable because of the constantly recurring calls to pack up and move on with the victorious troops. It was a penalty of success, and this evacuation to the base was really urgently necessary because the devastated country and the destroyed railways quite prevented the moving forward of the general hospitals.

The "Great War" was now drawing to a close, but it was destined not to end until we had crowned our success by an advance in the old "Ypres salient," and here on October 14th the Second Army fought for the last time over the old battlefield. The D.M.S., Major-General Guise Moores, pushed up our clearing stations in preparation for this fight, now not only as far as they had been before the previous March retreat, but this time as far as Ypres itself, and we established a group of three at Brielen, just outside Ypres.

I told you that I originally arrived at the Ypres front on October 13th, 1914, and here we were back again on October 14th, 1918, after an interval of just four years. I had heard the first shells come into Ypres, and that day I heard the last. It was interesting to realize that, whereas in 1914 there was no attempt to perform surgical operations at the front on a large scale, in 1918 no less than 40 per cent. of the whole of the patients who were brought to the Brielen casualty clearing stations of the Second Army were anaesthetized and passed through the operating theatres during heavy fighting.

Extraordinary changes had taken place in the treatment of wounded men between the "First battle of Ypres" in 1914 and the "Last battle of Ypres" in 1918.

You will remember that when Napoleon returned from Elba there was the campaign called "The Hundred Days." The great battle that the British army began on August 8th and finished on November 11th, and which

resulted in the defeat of the Germans and the ending of the war in 1918, instead of continuing through the winter, lasted just about the same time. It will very likely be known in future as "The Hundred Days Battle of the Great War."

During this period we had more than 300,000 wounded to deal with, but the accumulated experience of many battles and the systematized methods developed by constant practice enabled the work to be done with comparatively little difficulty. It is, of course, true that at times the casualty clearing stations were overworked and that the quality of the surgery suffered. This must always occur in great battles because of events beyond the control of the medical service. Yet, even when this is admitted, it may still be claimed that the British surgery of the front showed a continuous improvement in each successive year of the Great War.

ON ABDOMINO-THORACIC WOUNDS OF WARFARE.

BY

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THE first abdomino-thoracic gunshot wound which I ever saw and the first operation for this injury which I witnessed was in 1910 or 1911 in the Middlesex Hospital; an urgent thoraco-laparotomy was performed by my colleague and chief, Sir John Bland-Sutton, and a successful result was obtained in his skilful hands. The case was that of a footman of seventeen years, who shot himself in the chest with a revolver, "because the girl he loved did not requite his love." The wound of entry was in the fifth left intercostal space, half an inch below the left nipple; the patient's condition was desperate and the thorax was hastily opened by a vertical incision dividing the lower costal cartilages, and the abdomen was subsequently opened in the left linea semilunaris by a prolongation downwards of the thoracic incision. The missile was found to have traversed the lung, diaphragm, stomach, and spleen, and it was removed from beneath the skin in the left lumbar region. The pleura was swabbed dry of blood, and many ounces of blood were sponged from the coelom. Wounds of the anterior and of the posterior wall of the stomach were sutured, and the spleen, which was bleeding freely, was removed. The chest and abdomen were closed and the diaphragm sutured. An intravenous saline was given during the operation and the patient rallied thereafter. An empyema, due to infection with a coliform organism, retarded his recovery, but the patient ultimately got well. The sequel is interesting, for "the girl, finding the youth so ready to sacrifice himself for unrequited love, softened her heart; the pair are contented with each other now, although the accident went near to swelling the list of love stories with tragic endings."¹

This incision of Sir John Bland-Sutton for dealing with an abdomino-thoracic wound is, then, the prototype of the thoraco-laparotomy reintroduced by Pierre Duval in 1917—some six years later.

The subject of abdomino-thoracic wounds was discussed by Sir Anthony Bowlby, Jules Voncken, and Pierre Duval at the third Allied Surgical Congress for the study of war wounds held at Val-de-Grâce in November, 1917. Sir Anthony Bowlby's contribution to the discussion has been incorporated in the *Manual of Injuries and Diseases of War*, which was issued by the War Office in 1918. It would be idle to reiterate the information and opinions expressed therein; they are familiar to all the surgeons who have worked in the forward area. It is worthy of note that this class of wound constitutes about 9 per cent. of the thoracic wounds admitted into a casualty clearing station, and, according to Sir Cuthbert Wallace, about 12 per cent. of the abdominal cases. Jules Voncken's estimate of their frequency is, however, somewhat higher.

Some of the earlier papers specially point out the severity of this type of lesion. Walters, Rollinson, Jordan and Banks,² writing on February 10th, 1917, note especially the high mortality. Only 18.5 per cent. of such patients in their series of cases recovered, and they state that in those who survived only solid viscera were injured.

Major A. L. Lockwood, D.S.O., and his co-workers at No. 36 Casualty Clearing Station,⁸ as a result of their experiences in the Somme offensive of 1916, took a more hopeful view, and in March, 1917, pointed out that wounds of the diaphragm are by no means necessarily fatal, nor even to be greatly feared, if particular attention be given to repairing the diaphragm at the earliest possible moment. Lockwood's attention was especially focussed on this muscle, and the improved results in this class of case in his hands were undoubtedly due to the suture of this muscular barrier between chest and belly. The dogmatic statement, however, that death certainly ensues if something be not done to repair the diaphragm in every case of injury to that muscle, is open to question. On more than one occasion, especially on the right side, the diaphragm has been deliberately left unsutured, and a favourable issue has ensued. Increasing attention to the thoracic aspect of the abdomino-thoracic wound has led to still greater improvement in the results.

It must be remembered that it was not until the later part of 1916 that the general principles underlying the treatment of gunshot wounds in general were applied to injuries of the thorax. It is now generally accepted that the sooner a wound is rid of the agents carrying infection—for example, foreign bodies and clothing—and the sooner the media suitable for the growth of organisms are removed—for example, blood clot and devitalized and damaged tissue—the better is the prognosis. In no class of case was this axiom so neglected as in the case of gunshot wounds of the chest. Although Sir Henry Gray and Captain J. E. H. Roberts⁴ operated upon a chest case in Rouen early in 1916, and Major Jack Anderson, D.S.O., operated upon several chests in the early summer of 1916, yet it is to Pierre Duval, of the French army, and to Colonel Gask, C.M.G., D.S.O., that the credit is due of evolving a technique in dealing with wounds of the thorax.

During 1917 the attention of surgeons was increasingly directed upon thoracic surgery, and papers were published in the autumn of 1917 and early winter of 1917-18 by Gask and Wilkinson,⁵ Jack Anderson,⁶ Roberts and Craig,⁷ and Lockwood and Nixon,⁸ which embodied the experience derived from casualty clearing station work during the year.

Statistics all go to show that the *immediate* prognosis of an abdomino-thoracic wound is in many cases largely determined by the nature of the *abdominal injury*. Those that are accompanied by a wound of a hollow viscus are very fatal. Thus Sir Cuthbert Wallace found that only 7 out of 28 such cases were evacuated to the base—that is, the mortality amounted to 75 per cent. Gask and Wilkinson⁵ saved only 3 out of 13 cases with hollow viscus injury, and another series showed only 1 recovery in 5. Lockwood,⁸ however, managed to save 8 out of 20, and I have records of 11 recoveries of my own out of 22 cases, a recovery rate of 50 per cent. Nevertheless, when a comparison is instituted with cases associated with solid visceral injury, the mortality is relatively high.

My own personal series of 75 abdomino-thoracic cases submitted to operation, or at least transfused with blood with a view to operation, represents practically every abdomino-thoracic case admitted to my casualty clearing station from the end of the Cambrai "show" in 1917 till August, 1918. It also includes several cases operated upon in the beginning of the autumn advance of 1918. The recovery rate, therefore, is not merely the recovery rate of cases submitted to operation, but is really the recovery rate of those cases admitted to hospital in which it was considered that operation was urgently needed if life was to be saved. The cases complicated by hollow visceral injury gave a recovery rate of 50 per cent. Those complicated by wounds of a solid viscus showed a recovery rate of 70 per cent. The total recovery rate in my series is 64 per cent. In 22 of these cases transfusion was considered necessary and performed, and 11 of these recovered. Nine of the 22 transfusions were hollow viscus injuries, and 5 lived.

An analysis of the 27 cases that ended fatally shows that 2 died before any operation could be performed, 13 in less than twelve hours, and one in eighteen hours, presumably from the abdominal injury. The remaining 11 all died of some form of chest complication—massive collapse, pneumonia, thoracic sepsis; one died of a sub-phrenic abscess.

The remarkable statistics of Saint and Jack Anderson are worthy of notice (*vide infra*). Saint's recovery rate in

22 cases is over 80 per cent.; in only two cases, however, of this series was there injury of any hollow viscus, but some of the cases which recovered were complicated by very severe wounds of other parts. Major Jack Anderson, D.S.O., has a remarkable recovery rate of 79.2. Forty-two out of 53 of his cases were evacuated to the base. In his series also the relative number of cases complicated by injury to the hollow viscera was small. None the less, both series of statistics constitute a triumph of surgery.

I have been able to collect 207 cases of abdomino-thoracic injury operated upon during the year 1918 either by myself or by some of my colleagues in the Fourth Army, who have courteously sent me their notes. As is shown in the accompanying table, 138 made a good recovery; the percentage of recoveries amounts to 66.6. When compared with Sir Anthony Bowlby's figures given at the Surgical Congress at Val-de-Grâce in November, 1917, these statistics show a remarkable improvement. Sir Anthony published notes of 151 cases, with 74 recoveries—recovery rate 49 per cent. Sir Cuthbert Wallace, in his *War Surgery of the Abdomen*, published in the summer of 1918, gives 70 cases, with 31 recoveries—percentage recovery 44.3.

Some Abdomino-Thoracic Injuries Operated on in the Fourth Army during 1918.

Surgeon.	Cases.	Recoveries.	Percentage of Recoveries.
Saint	22	18	81.8
Jack Anderson	53	42	79.2
Hancock	12	8	66.6
Gordon Taylor	75	48	64.0
Stanley	24	14	58.3
Walker	21	8	38.1
Total	207	138	66.6
Sir Anthony Bowlby, November, 1917	151	74	49.0
Sir Cuthbert Wallace, 1918 ...	70	31	44.3

Perhaps some allowance may be made for a surgeon's vanity over not only his own but also his colleagues' successful cases, and licence may be granted me to quote several cases of severe abdomino-thoracic injury saved by surgery; the desperate nature of this type of wound may not be fully realized by those who are not personally acquainted with the work in the casualty clearing zone.

Major Lockwood, D.S.O., of No. 36 Casualty Clearing Station, records the following case:

CASE I.

Gunner C., aged 31; penetrating chest wound; haemothorax; laceration of diaphragm, liver, and right kidney, with hernia of colon.

On arrival at the casualty clearing station on September 27th, 1917, he was moribund. Active resuscitation; heated bed, sleep (omnupon), intravenous sodium bicarbonate 2 per cent. 20 oz. Rallied very slowly. Blood transfusion 600 c.cm. with Kimpton-Browne tube.

Operation six hours after admission; prepared and taken to theatre directly after blood transfusion, condition being much improved. Pulse rate 130 to 140; blood pressure 85; respirations rapid. Large entrance wound admitted three fingers (not a sucking wound) just to the right of body of third lumbar vertebra. Dirty jagged exit wound admitting three fingers over the costal cartilage of the ninth right rib in the anterior axillary line. Hernia of colon through exit wound, gangrenous patch size of one franc piece with half-inch laceration. Anaesthesia, paravertebral and local. Incision from side of third lumbar vertebra to cartilage of ninth rib. Excision *en masse* of entry and exit wounds with deep muscles of back. Gangrenous patch in the bowel excised, and closed with linen thread. Colon replaced in peritoneum. Chest entirely full of clotted blood. A widely open laceration of diaphragm five inches long and a quarter to half an inch from its parietal attachment. Lung almost completely collapsed. Pleura cleansed. Diaphragm sutured with catgut. Laceration of outer and lower border of liver admitting three fingers, but liver not bleeding. Peritoneum swabbed dry and closed. Right kidney split across beyond repair. Nephrectomy. Operation entirely carried out under paravertebral and local anaesthesia; no gas and oxygen used. Recovery uneventful; evacuation November 20th, 1917.

Major Charles, O.B.E., of No. 30 Casualty Clearing Station and of Ipswich, has sent me notes of another case.

CASE II.

Lieut.-Colonel P. of the Third Canadian Division, was admitted under his care for a shell wound of the left arm, and an abdomino-thoracic wound of the left side. The missile had entered over the eighth rib in the left nipple line. The patient was collapsed and pulseless on admission, and exhibited signs of severe internal haemorrhage. Resuscitation for two hours; abdomen explored by transdiaphragmatic route. Resection of 6 inches of rib; haemothorax evacuated; omentum found protruding through diaphragm. Spleen hopelessly shattered; splenectomy; wound of stomach sutured; diaphragm sutured, and thorax closed. Pulse at end of operation 150. Transfusion of blood 2 pints. Twelve hours later the pulse was 100 and of good volume. The officer made thereafter an uneventful recovery, and was discharged fit for duty three months later.

Major Saint's case of an abdomino-thoracic wound with penetration of chest, diaphragm, and liver, and wounds of the duodenum and colon by a large piece of shell, is well worthy of mention, particularly when we reflect upon the high mortality associated with wounds of the first portion of the small bowel.

It would be possible to multiply almost indefinitely the records of desperate abdomino-thoracic cases which have survived by reason of surgery; such cases have, I suppose, been sent down by the surgeons of almost every casualty clearing station on the British front. Some cases of my own have been a source of satisfaction to me.

CASE III.

Pte. S. M., of the A.I.F., was hit about midnight near a ration dump by a large piece of air bomb. He was admitted into the casualty clearing station some hours later in a moribund condition. Active resuscitation was started, but his state remained desperate, and twelve hours later he was taken to the operating theatre in a pulseless condition. Blood transfusion 800 c.cm.; wound of entry in lower part of left chest widely excised, and haemothorax evacuated; several feet of small intestine in pleural cavity, spleen almost completely divided into four pieces; splenectomy; wound of diaphragm enlarged, edges excised; small intestine returned into coelom; diaphragm sutured, chest closed. The patient developed pneumonia in the lower lobe of the right lung, but made a good recovery and returned to Australia.

CASE IV.

Sapper McG. was admitted into a casualty clearing station in a pulseless and apparently moribund condition one evening in July, 1918. So desperate was his condition that the reception room officer informed me that he thought he would be dead before I could reach the hospital from the officers' mess. Active resuscitation was, however, practised, and he was taken to the theatre three-quarters of an hour later; he was found to have an enormous tangential wound of the lower portion of the right chest. Four ribs were badly "stove in," an enormous rent in his liver was bleeding, and there was a hernia of the hepatic flexure of the colon and of the right kidney. Blood transfusion 800 c.cm. Damaged ribs resected; damaged portion of liver excised; kidney and colon washed and replaced; the diaphragm, which had been detached by the missile, was resutured to the upper edge of the opening in the pleura. The following day the left arm was amputated for a severe gunshot wound of the forearm with extensive damage to muscle and gas gangrene, which by this time had established itself. The patient, notwithstanding the severity of the injury, made a good recovery.

CASE V.

Sgt. G., of the A.I.F., was admitted to a casualty clearing station in the middle of July for a severe abdomino-thoracic wound of the left side. The diaphragm had been detached from its costal attachments for about five inches. The lower ribs were badly "stove in"; the left kidney was split irreparably, and covered with dirt and filth. The splenic flexure of the colon was shattered and gangrenous and was resected, an end-to-end junction was performed; the right kidney was hopelessly damaged and impregnated with dirt, and was removed. The diaphragm was reattached to the upper margin of the wound in the pleural cavity, and the abdominal cavity properly resutured and closed by a plastic operation.

The patient was brought to the operating theatre in a pulseless condition in spite of resuscitatory measures which had been practised for six hours since his arrival in the hospital. Blood transfusion was commenced at the same time that the operation started. For four days subsequent to his operation the patient did well; then an anaërobie infection of his chest declared itself. Thoracotomy was performed through a fresh incision, some clot evacuated, and the pleura washed with flavine and closed. In spite of blood transfusion and frequent aspiration the infection gained ground, and cultures of the fluid from the pleura showed the presence of almost every anaërobie prone to attack wounds of the chest. He died on the eighth day after the operation.

These examples are typical of the severe abdomino-thoracic case; the improved figures, then, are not due to the fact that the type of case that has come under the care of the surgeon has been less severe. The cases quoted above show that the benefits of surgery were

extended by the casualty clearing station officers to even the most desperately wounded.

I am convinced that the *immediate mortality* of the most desperate cases has been reduced by blood transfusion, by nerve-blocking, and probably also by the more extensive employment of gas and oxygen. None the less, it is only fair to add that one has seen many desperate cases recover where chloroform and oxygen have been used.

The *late mortality* of the abdomino-thoracic wound has most certainly been reduced by the improved technique of thoracic surgery.

Two cases of a special interest have reached casualty clearing stations as the result of accidents to kite balloons on the British front.

CASE VI.

Two Hun aeroplanes came out from behind a cloud and "strafed" a kite balloon near Sorel. One plane selected as the object of its attack the balloon itself, the other made for the observing officers as they descended to the ground in parachutes. One escaped completely, the other sustained a severe abdomino-thoracic wound of the right side, involving chest, diaphragm, and liver. He made a good recovery.

CASE VII.

Sgt. S., of the Kite Balloon Section, was observing at about 2,000 feet. He was shot by a Hun airman through the right chest and abdomen. He came down in a parachute, and at the operation one-third of the right lobe of the liver was found to be completely detached and lying free in the abdomen. The liver and diaphragm was sutured; shock was very severe. The wound broke down badly on the tenth day; the intestines were in the bed, but were replaced; the wound was resutured, and the patient made a good recovery. I am indebted to Major Jack Anderson, D.S.O., for the notes of this case.

The following case is of interest:

CASE VIII.—Abdomino-thoracic Injury Produced by a Bayonet.

Lieut. B. was out on night patrol, and was bayoneted through the right hypochondrium. At operation the liver, diaphragm, and pleura were found to be penetrated. An empyema complicated his convalescence, but he was ultimately discharged fit.

CASE IX.—A Case for Diagnosis.

A soldier was standing by his horse in the transport lines near Templeux-Guerard and was suddenly seized with pain in the right side of the abdomen. He was admitted to the main dressing station and sent down by an able officer of a resuscitation team attached to a corps main dressing station as a case of "appendicitis." He was admitted to a casualty clearing station, where, after careful examination, several competent surgeons diagnosed a "perforated duodenal ulcer." To exclude the possibility of any thoracic disease with referred abdominal pain, a physician was invited to examine the chest. Apart from the fact that the breathing was weaker over the right lower lobe, no abnormal physical signs were observed.

The abdomen was opened. A few drachms of blood were found in the right kidney pouch; the duodenum was examined and a perforation was found in the first part. The diagnosis seemed only too truly confirmed. The opening was sutured and the abdomen closed. For some eighteen hours the patient did well, but suddenly failed and died.

I had the opportunity of being present at the autopsy. The sutured perforation was in good repair, but there was more blood in the peritoneal cavity than at the first operation. The duodenal suture was undone and a finger introduced into the lumen of the bowel, passed through another opening posteriorly, and impinged against a machine-gun bullet embedded in the head of the pancreas! Investigation of the source of the bleeding in the coelom revealed the fact that there was a through-and-through wound of the liver. Very careful search of the surface of the body disclosed a minute wound of entry in the supraspinous region of the right scapula. Although the bullet had passed downwards through the lung and diaphragm, only about a couple of ounces of blood were present in the right chest cavity; the diaphragmatic opening was minute.

It is interesting to add that this patient, on admission to the casualty clearing station, when describing the onset of his pain, made the remark that "it felt exactly as if he had been shot." The missile apparently came from an enemy aeroplane; it was an armour-piercing bullet. He was indeed a "battle casualty"!

Traumatic Diaphragmatic Hernia.

Out of 22 personal cases of abdomino-thoracic wounds of the left side, associated with injury of a hollow viscus, there was a hernia of the stomach in 4. In one case small bowel, and in one the colon, was herniated into the pleura, and in nearly every case there was a hernial protrusion of omentum. Increasing experience of hernia in left-sided abdomino-thoracic wounds made me the more inclined to approach the diaphragm from the thoracic side, even when the injury was due to a bullet.

CASE X.—*Traumatic Diaphragmatic Hernia of the Diaphragm,
Fatal Seven Months after the Wound.*

Captain C. P. Symonds⁹ has reported in detail the case of a private, aged 29, who was admitted to the Connaught Hospital, Aldershot, at the end of August, 1916, for severe abdominal pain. He was wounded in the preceding February when fighting against the Senussi.

Six weeks after the original wound he had his first attack of pain, which was, however, very slight. The attacks of pain became more frequent and more severe, but the attack which brought him for relief to the Connaught Hospital was the most severe that he had till then experienced. On radiography, after a bismuth meal, the bismuth was seen to extend in the stomach right up to the second left rib in front, and above it could be seen the dense compressed lung. He was therefore transferred as an urgent surgical case to the Cambridge Hospital, Aldershot, to be under surgical care. Here, however, his condition rapidly improved; the pain disappeared, and in a few days he was able to take food without discomfort. He came under my observation and that of my colleague, Major James Taylor, and considerable doubt was expressed as to the validity of the diagnosis. The x-ray experts at the Cambridge and at the Connaught were not in agreement in their findings nor in the interpretation thereof. The man seemed very well, and surgery did not appear to be urgently called for.

In the beginning of October the patient had another severe attack of pain, and in my absence an operation was performed by Major James Taylor. A hole in the diaphragm was found, but the man's condition was desperate, and he died of shock.

At the autopsy a large circular opening, admitting a medium-sized hand, with quite smooth and rounded edges, was found near the centre of the left dome of the diaphragm. In the thorax were the stomach, great omentum, transverse colon, upper half of small gut, the last kinked in several places, distended, and of a deep plum colour. The stomach reached as high as the second left rib and was partly adherent to the chest wall.

The expanded copper casing of a rifle bullet was discovered in one edge of the diaphragmatic wound, but no trace of the leaden core was found. Presumably the latter had been removed in the earlier operation performed in Africa.

It is remarkable that, considering the number of abdomino-thoracic wounds which must have been operated on in the early part of the war, so few cases of diaphragmatic hernia have been recorded. Perhaps Lockwood's contention that very few of these cases survive is true. D'Oyly Grange¹⁰ has, however, recorded a case of diaphragmatic hernia which followed a bullet wound of the left chest. It was successfully operated on in Newcastle by the abdominal route.

P. Lecène¹¹ has recorded two cases of traumatic diaphragmatic hernia of the stomach which became strangled, and in one case underwent torsion as well. These cases were operated upon from the abdomen; in one the cartilago-osseous thoracic outlet was temporarily detached; in the other the eighth costal cartilage had been removed at a previous operation, and ready access was thereby afforded to the region of the hernia. I have knowledge of two more cases of diaphragmatic hernia, each consequent upon a bullet wound, which became strangled. One was successfully operated upon; the other proved fatal.

Experience has persuaded me that the thoracic route is the right method of approach for dealing with a diaphragmatic hernia. The Germans have painted too gloomy a picture of the dangers of an artificial pneumothorax, and have made too much of their negative-pressure chambers and positive-pressure anaesthetic arrangements.

In the treatment of abdomino-thoracic injuries, just as in that of wounds of most regions of the body, the successive years of the war have witnessed a steady progress; more and more abundant have become the triumphs that surgery has won. I am proud of the privilege I enjoyed of working for nearly two years in the casualty clearing zone, where these triumphs have been gained, and I am especially grateful to Major-General Sir Anthony Bowlby, K.C.B., through whose kindly offices I was enabled to share the labours of those who gladly and cheerfully toiled at "the back of the front."

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THE Belgian Surgical Society will celebrate the twenty-fifth anniversary of its foundation in September next at Brussels.

ACUTE DIVERTICULITIS OF THE TRANSVERSE COLON: RESECTION OF BOWEL: RECOVERY.

By H. F. VELLACOTT, F.R.C.S.,
PLYMOUTH.

Mrs. W., aged 36, was admitted to the Royal Albert Hospital, Plymouth, on December 28th, 1918.

History.

She had been subject to attacks of pain in the upper abdomen for about eighteen months. This pain was severe at times, but had no relation to food though she had to be careful what she ate. On the day of admission she had "had indigestion all day," which developed into acute pain quite suddenly about 5 p.m. Dr. Pullen, of Stoke, was called at 10 p.m., and immediately sent her to hospital where I saw her at 11 p.m.

Vomiting and the signs of acute appendicitis were all present with the exception that the maximum tenderness and rigidity were situated to the right of and close to the umbilicus. This was noted, but I made the diagnosis of appendicitis without hesitation.

The general condition was excellent, the pulse being 84 and the temperature 99.8° F.

Operation.

A right rectus incision was made. There was considerable excess of free fluid present in the abdomen with a faint smell of *B. coli*. The appendix was easily found, and seen to have been the seat of former disease, but was obviously not the cause of the present attack. It was rapidly removed. By introducing the finger I could now feel a mass higher up in the abdomen, and therefore enlarged the incision. Adherent to the transverse colon lying in relation to the second part of the duodenum was a small amount of "lymph" and a mass the size of a large walnut was felt in its upper and posterior wall. The omentum was wrapped round this. From the mass a thick band passed up in the transverse mesocolon towards the central group of lymph glands. This band and the mass in the bowel were so hard that I diagnosed malignant disease with perforation, and decided to resect. About six inches of the gut were accordingly resected, and an end-to-end union made. Great care was necessary in the resection, as the thickening in the mesentery involved the superior mesenteric vessels. The resected segment of gut was slit down and held out for my examination, and the true diagnosis became apparent. No other diverticula were seen on the exposed part of the bowel. It was noted that the gall bladder lay immediately above the area of resection, but was not involved in adhesions. Gall stones were felt, but it was not the time to remove them, so I closed the abdomen except for a rubber drainage tube.

The progress of the patient was uninterrupted, and I last saw her on June 12th, when she looked very well. She suffers from indigestion, which suggests that an operation may soon be necessary for removal of gall stones.

Description of Specimen.

On examining the part removed I could find no trace of malignant disease in the lumen of the gut, but on the upper posterior wall was a small opening, an eighth of an inch wide, leading to a cavity in the hard mass. This cavity was a little more than a quarter of an inch in diameter, and was neatly filled by a concretion which could be seen from the lumen of the gut. A perforation had taken place from the diverticulum forwards into the general peritoneal cavity in front of the transverse mesocolon. Microscopical sections showed no trace of malignancy. The concretion was composed of inspissated faeces.

The case is of interest as occurring in the transverse colon and at the early age of 36. Apparently it is not the first time that the inflamed and cicatricial mass has been mistaken for a growth in these cases. For the original diagnosis of appendicitis I make no apology.

THE INGUINAL ROUTE FOR RADICAL CURE OF OBTURATOR HERNIA.

BY

TEMP. MAJOR E. T. C. MILLIGAN, R.A.M.C.

ATTENTION has recently again been focussed on the inguinal approach in the operation for radical cure of femoral hernia. Above many other advantages, it ensures the obliteration of the sac. The suitability of the same approach for the radical cure of obturator hernia is worthy of note. The class of case to which it might be applied is represented by a patient who came under my observation recently.

He complained of dull pain over the inner portion of Scarpa's triangle in the right thigh, with indefinite tenderness over the inner and upper portion of the pectineus muscle; the symptoms,